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10/538,286	07/05/2005	Heiko Brunner	B-7240	1772
7590 04/10/2009 Harding Earley Follmer & Frailey 86 The Commons at Valley Forge 1288 Valley Forge Road Post Office Box 750 Valley Forge, PA 19482-0750				
EXAMINER				
WILLIS, DOUGLAS M				
ART UNIT		PAPER NUMBER		
1624				
MAIL DATE		DELIVERY MODE		
04/10/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/538,286

Applicant(s)

BRUNNER ET AL.

Examiner

DOUGLAS M. WILLIS

Art Unit

1624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-31 is/are pending in the application.
- 4a) Of the above claim(s) 15-29 and 31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-14 and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/S5108)
Paper No(s)/Mail Date 08-13-07
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Status of the Claims

Claims 1 and 3-31 are pending in the current application. According to the *Amendments to the Claims*, filed March 10, 2009, claim 1 was amended and claim 2 was cancelled. This application is a 35 U.S.C. § 371 National Stage Filing of International Application No. PCT/EP2003/013994, filed December 9, 2003, which claims priority under 35 U.S.C. § 119(a-d) to DE 102618526, filed December 20, 2002.

Priority

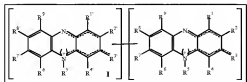
Receipt is acknowledged of papers submitted under 35 U.S.C. § 119(a-d), which papers have been placed of record in the file.

Should applicant desire to obtain the benefit of foreign priority under 35 U.S.C. § 119(a-d) prior to declaration of an interference, a certified English translation of the foreign application must be submitted in reply to this Office action. See 37 CFR 41.154(b) and 41.202(e).

Failure to provide a certified English translation may result in no benefit being accorded for the non-English application.

Restrictions / Election of Species

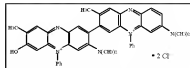
Applicant's provisional election of the following, with traverse, in the reply filed on



March 10, 2009, is acknowledged: a) Group I - claims 1, 3-14 and 30; and b) substituted phenazinium salt of

formula I - p. 23, example vii, shown right below, and hereafter referred to as 3,8'-bis(dimethyl-amino)-7-hydroxy-3',8-dimethyl-5,10'-diphenyl-2,2'-biphenazine-5,10'-dium dichloride salt,

where $R^1 = -H$; $R^2 = -H$; $R^3 = -N(CH_3)_2$; $R^4 = -H$; $R^5 = -Ph$; $R^6 = -H$; $R^7 = -a$ single bond; $R^8 = -CH_3$; $R^9 = -H$; $R^{1'} = -H$; $R^{2'} = -a$ single bond; $R^{3'} = -N(CH_3)_2$; $R^{4'} = -H$; $R^{5'} = -Ph$; $R^{6'} = -H$; $R^{7'} = -OH$; $R^{8'} = -CH_3$; and $R^{9'} = -$



H. Claims 1, 3 and 8-14 read on the elected species. Affirmation of this election must be made by applicant in replying to this Office action.

The traversal is on the grounds that Groups I and II should be examined simultaneously. This is not found persuasive because the multiple inventions in the instant application are independent or distinct for the reasons disclosed in the *Requirement for Restriction / Election of Species*, mailed on November 12, 2008. Furthermore, there would be a serious burden on the examiner if restriction was not required because the inventions have acquired a separate status in the art due to their divergent subject matter and would require a different field of search.

The requirement is still deemed proper and is therefore made FINAL.

The elected species, shown above, was found to be free of the prior art. Thus, the examiner has expanded the forthcoming prosecution to include all claims relevant to the genus of Group I, for a first Office action and prosecution on the merits.

Claims 15-29 and 31 were withdrawn from further consideration, pursuant to 37 CFR 1.142(b), as being drawn to a nonelected or canceled invention, there being no allowable generic or linking claim.

Thus, a first Office action on the merits of claims 1, 3-14 and 30 is contained within.

Specification Objection - Disclosure

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase *Not Applicable* should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art (including information disclosed under 37 CFR 1.97 and 1.98).
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825).

Applicant is advised to format the specification according to 37 CFR 1.77(b) above. Revisions should particularly include and/or address: a) bold-type, uppercase and underline formatting; and b) sections (b-i), where applicable. Appropriate correction is required.

Specification Objection - Title

Applicant is reminded of the proper content of the title of the invention.

The title of the invention should be brief, but technically accurate and descriptive, preferably from two to seven words. See 37 CFR 1.72(a) and MPEP § 606.

The title of the invention is not technically accurate and descriptive. A new title is

required that is clearly indicative of the invention to which the claims are directed. In the revised title, the examiner suggests identifying: a) the substituted phenazinium salts of the formulae I and II; and b) a particular utility for the substituted phenazinium salts of the formulae I and II.

Claim Objections

Claim 1 is objected to because of the following informalities: a) *and* is omitted at the end of the last line on p. 3; and b) *formula* should be replaced with *formulae* in lines 6 and 8 on p. 4. Appropriate correction is required.

Claim 11 is objected to because of the following informalities: a) a colon is omitted at the end of line 3; b) *chlorine* should be replaced with *chloro*, where applicable; c) appropriate punctuation (i.e. *semicolon* or *comma*) is required after each species; and d) compound identifiers [i.e. *a*), *b*), *etc.*] should be omitted. Appropriate correction is required.

Claim 12 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim, amend the claim to place the claim in proper dependent form, or rewrite the claim in independent form. The synthetic methodology employed for the mixture of oligomeric phenazinium compounds signifies the onset of a *product-by-process* claim, wherein said claim is not limited to the manipulations of the recited steps, but only by the structure implied by the steps. Consequently, the synthetic methodology employed for the mixture of oligomeric phenazinium compounds, wherein the mixture of oligomeric phenazinium compounds is produced by diazotization, is not found to be further limiting, since the intended synthetic methodology is not given patentable weight. See MPEP § 2111.04 and MPEP § 2113.

The examiner suggests removing the clause *wherein the mixture is produced by diazotization...*, to overcome this objection.

Claim 14 is objected to because of the following informalities: the phrase *wherein they are* should be omitted in line 2; b) *comprising* should be replaced with *consisting of*; c) *chlorine* should be replaced with *chloro*, where applicable; d) appropriate punctuation (i.e. *semicolon* or *comma*) is required after each species; e) compound identifiers [i.e. *i.*, *ii.*, *etc.*] should be omitted; and f) the hyphen between the cation and the anion of each species should be omitted. Appropriate correction is required.

Claim Rejections - 35 U.S.C. § 112, First Paragraph

The following is a quotation of the first paragraph of 35 U.S.C. § 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Substituted phenazinium salts of the formulae I and II

Claims 1, 3-10, 12, 13 and 30 are rejected under 35 U.S.C. § 112, first paragraph, because the specification, while being enabling for substituted phenazinium salts of the formulae I and II, where independently $R^{1-4,6-9} = -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; $R^{1'-4',6'-9'} = -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; $R^{1''-4'',6''-9''} = -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; and $R^{5,5',5''} = -H, -C_{1-8}alkyl$ or -Ph, does not reasonably provide enablement for substituted phenazinium salts of the formulae I and II, where independently $R^{1-4,6-9} \neq -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; $R^{1'-4',6'-9'} \neq -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; $R^{1''-4'',6''-9''} \neq -H, -C_{1-8}alkyl, -halogen, -OH,$

-SH, -Ph or -a single bond; and $R^{5,5',5''} \neq -H, -C_{1-8}alkyl$ or -Ph. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. Substituted phenazinium salts of the formulae I and II, where independently $R^{1-4,6-9} \neq -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; $R^{1'-4',6'-9'} \neq -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; $R^{1''-4''-9''} \neq -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; and $R^{5,5',5''} \neq -H, -C_{1-8}alkyl$ or -Ph, as recited in claim 1, have not been adequately enabled in the specification to allow any person having ordinary skill in the art, at the time this invention was made, to make and use substituted phenazinium salts of the formulae I and II, where independently $R^{1-4,6-9} \neq -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; $R^{1'-4',6'-9'} \neq -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; $R^{1''-4''-9''} \neq -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; and $R^{5,5',5''} \neq -H, -C_{1-8}alkyl$ or -Ph.

There are many factors to be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is *undue*. These factors include, but are not limited to: (a) breadth of the claims; (b) nature of the invention; (c) state of the prior art; (d) level of one of ordinary skill in the art; (e) level of predictability in the art; (f) amount of direction provided by the inventor; (g) existence of working examples; and (h) quantity of experimentation needed to make or use the invention based on the content of the disclosure. {See *Ex parte Forman* 230 USPQ 546 (Bd. Pat. App. & Inter. 1986) and *In re Wands*, 8 USPQ2d 1400 (Fed. Cir. 1988)}.

The above factors, regarding the present invention, are summarized as follows:

Art Unit: 1624

- (a) *Breadth of the claims* - the breadth of the claims includes all of the tens of thousands of substituted phenazinium salts of the formula I, shown right, and trimeric formula II (not shown);
- The image shows two chemical structures labeled I and II. Structure I is a phenazinium cation, which consists of a central nitrogen atom bonded to two benzene rings and a third ring. The nitrogen atom has a positive charge. The structure is shown with various substituents R¹ through R¹⁰. Structure II is a trimeric phenazinium salt, which consists of three phenazinium units linked together. The structure is shown with various substituents R¹ through R¹⁰.
- (b) *Nature of the invention* - the nature of the invention is synthesis of substituted phenazinium salts of the formulae I and II and the evaluation of these substances as constituents in copper plating baths;
- (c) *State of the prior art* - *US 6,425,996*, as cited on the IDS, offers a snapshot of the state of electrolytic deposition of copper coatings in baths. Hercin, the addition of organic additives is highlighted (Dahms, W., et al. *US 6,425,996*, **2002**, pp. 1-7);
- (d) *Level of one of ordinary skill in the art* - the artisans synthesizing applicant's substituted phenazinium salts of the formulae I and II, where independently R^{1-4,6-9} ≠ -H, -C₁₋₈alkyl, -halogen, -OH, -SH, -Ph or -a single bond; R^{1'-4',6'-9'} ≠ -H, -C₁₋₈alkyl, -halogen, -OH, -SH, -Ph or -a single bond; R^{1''-4'',6''-9''} ≠ -H, -C₁₋₈alkyl, -halogen, -OH, -SH, -Ph or -a single bond; and R^{5,5',5''} ≠ -H, -C₁₋₈alkyl or -Ph, would be a collaborative team of synthetic chemists, possessing commensurate degree level and/or skill in the art, as well as several years of professional experience;
- (e) *Level of predictability in the art* - Synthetic organic chemistry is quite unpredictable (*In re Marzocchi and Horton* 169 USPQ at 367 ¶ 3). The following excerpt is taken from Dörwald, which has extreme relevance to the synthesis of substituted phenazinium salts of the formulae I and II, where independently R^{1-4,6-9} ≠ -H, -C₁₋₈alkyl, -halogen, -OH, -SH, -Ph or -a single bond; R^{1'-4',6'-9'} ≠ -H, -C₁₋₈alkyl, -halogen, -OH, -SH, -Ph or -a single bond; R^{1''-4'',6''-9''} ≠ -H, -C₁₋₈alkyl, -halogen, -OH, -SH, -Ph or -a single bond; and R^{5,5',5''} ≠ -H, -C₁₋₈alkyl or -Ph (Dörwald, F. Zaragoza. *Side Reactions in Organic Synthesis: A Guide to Successful Synthesis Design*, Weinheim: WILEY-VCH Verlag GmbH & Co. KGaA, **2005**, Preface):

Most non-chemists would probably be horrified if they were to learn how many attempted syntheses fail, and how inefficient research chemists are. The ratio of successful to unsuccessful chemical experiments in a normal research laboratory is far below unity, and synthetic research chemists, in the same way as most scientists, spend most of their time working out what went wrong, and why.

Despite the many pitfalls lurking in organic synthesis, most organic chemistry textbooks and research articles do give the impression that organic reactions just proceed smoothly and that the total synthesis of complex natural products, for instance, is maybe a labor-intensive but otherwise undemanding task. In fact, most syntheses of structurally complex natural products are the result of several years of hard work by a team of chemists, with almost every step requiring careful optimization. The final synthesis usually looks quite different from that originally

Art Unit: 1624

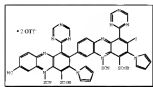
planned, because of unexpected difficulties encountered in the initially chosen synthetic sequence. Only the seasoned practitioner who has experienced for himself the many failures and frustrations which the development (sometimes even the repetition) of a synthesis usually implies will be able to appraise such work.

Chemists tend not to publish negative results, because these are, as opposed to positive results, never definite (and far too copious).

- (f) *Amount of direction provided by the inventor* - the application is negligent regarding direction with respect to making and using substituted phenazinium salts of the formulae I and II, where independently $R^{1-4,6-9} \neq -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; $R^{1'-4',6'-9'} \neq -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; $R^{1''-4'',6''-9''} \neq -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; and $R^{5,5',5''} \neq -H, -C_{1-8}alkyl$ or -Ph;
- (g) *Existence of working examples* - applicant has provided sufficient guidance to make and use substituted phenazinium salts of the formulae I and II, where independently $R^{1-4,6-9} = -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; $R^{1'-4',6'-9'} = -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; $R^{1''-4'',6''-9''} = -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; and $R^{5,5',5''} = -H, -C_{1-8}alkyl$ or -Ph; however, the disclosure is insufficient to allow extrapolation of the limited examples to enable the scope of the tens of thousands of substituted phenazinium salts of the formulae I and II, where independently $R^{1-4,6-9} \neq -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; $R^{1'-4',6'-9'} \neq -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; $R^{1''-4'',6''-9''} \neq -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; and $R^{5,5',5''} \neq -H, -C_{1-8}alkyl$ or -Ph. The specification lacks working examples of substituted phenazinium salts of the formulae I and II, where independently $R^{1-4,6-9} \neq -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; $R^{1'-4',6'-9'} \neq -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; $R^{1''-4'',6''-9''} \neq -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or -a single bond; and $R^{5,5',5''} \neq -H, -C_{1-8}alkyl$ or -Ph.

Within the specification, "specific operative embodiments or examples of the invention must be set forth. Examples and description should be of sufficient scope as to justify the scope of the claims. *Markush* claims must be provided with support in the disclosure for each member of the *Markush* group. Where the constitution and formula of a chemical compound is stated only as a probability or speculation, the disclosure is not sufficient to support claims identifying the compound by such composition or formula." See MPEP § 608.01(p).

- (h) *Quantity of experimentation needed to make or use the invention based on the content of the disclosure* - Synthetic organic chemistry is quite unpredictable (*In re Marzocchi and Horton* 169 USPQ at 367 ¶ 3).



Furthermore, it is unclear, based on the guidance provided by the specification, whether a substituted phenazinium salt of the formula I, such as 7-cyano-4,9'-bis(ethoxysulfonyl)-7'-iodo-3,8'-di(1H-pyrrol-1-yl)-5,10'-dithiocyan-

ato-1,6'-di(1,3,5-triazin-2-yl)-2,2'-biphenazine-5,10'-dium ditriflate salt, shown to the left above, is either synthetically feasible or possesses utility as a constituent in a copper plating bath.

A conclusion of lack of enablement means that, based on the evidence regarding each of the above factors, the specification, at the time the application was filed, would not have taught one skilled in the art how to make and/or use the full scope of the claimed invention without undue experimentation. {See *In re Wright*, 999 F.2d 1557, 1562, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993)}.

The determination that *undue experimentation* would have been needed to make and use the claimed invention is not a single, simple factual determination. Rather, it is a conclusion reached by weighing all the above noted factual considerations. (See *In re Wands*, 858 F.2d at 737, 8 USPQ2d at 1404). These factual considerations are discussed comprehensively in MPEP § 2164.08 (scope or breadth of the claims), § 2164.05(a) (nature of the invention and state of the prior art), § 2164.05(b) (level of one of ordinary skill), § 2164.03 (level of predictability in the art and amount of direction provided by the inventor), § 2164.02 (the existence of working examples) and § 2164.06 (quantity of experimentation needed to make or use the invention based on the content of the disclosure).

Based on a preponderance of the evidence presented herein, the conclusion that applicant is insufficiently enabled for making and using substituted phenazinium salts of the formulae I and II, where independently $R^{1-4,6-9} \neq -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or $-a$ single bond; $R^{1'-4',6'-9'} \neq -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or $-a$ single bond; $R^{1''-4'',6''-9''} \neq -H, -C_{1-8}alkyl, -halogen, -OH, -SH, -Ph$ or $-a$ single bond; and $R^{5,5''} \neq -H, -C_{1-8}alkyl$ or $-Ph$, is clearly justified.

Claim Rejections - 35 U.S.C. § 112, Second Paragraph

The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 3-14 and 30 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase *at least about*, in claim 1, is a relative phrase which renders the claim indefinite. The phrase *at least about* is not defined by the claims, the specification does not provide an adequate standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. On p. 12, the specification mentions the phrase *at 80 mol %* (by weight in the mixture?); however, the phrase *at least about* fails to explicitly limit the invention to this specifically disclosed embodiment. Thus, the substituted phenazinium salts of the formula I have been rendered indefinite by the use of the phrase *at least about*. See MPEP § 2173.05(b).

The examiner suggests removal of the phrase *at least about*, to overcome this rejection.

Claims 1, 3-14 and 30 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase *a mixture of*, in claim 1, is a relative phrase which renders the claim indefinite. The phrase *a mixture of* is not defined by the claims, the specification does not provide an adequate standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The examiner interprets

the recitation to embrace specific oligomeric substituted phenazinium salts of the formulae I and II and associated monomers thereof, but not *mixtures* of the former. Is applicant reciting *mixtures* of substituted phenazinium salts of the formulae I and II, *oligomers* synthesized from the monomers recited in claim 11 or implying that the monomers of claim 11, when reacted together, will form *mixtures* of the formulae I and/or II (referred to also as *oligomers*)? If applicant's intent is other than the aforementioned, where are such *mixtures* and what are the respective components? The terms *oligomer* and *mixture* differ substantially in scope. Thus, the substituted phenazinium salts of the formulae I or II have been rendered indefinite by the use of the phrase *a mixture of*.

The examiner suggests removal of the phrase *a mixture of*, to overcome this rejection.

Claims 1, 3-10, 12, 13 and 30 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term *amino*, in claim 1, is a relative term which renders the claims indefinite. The term *amino* is not defined by the claims, the specification does not provide an adequate standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The claims recite alkylated *amino* groups; however, the term *amino* is not explicitly limited to these preferred embodiments. Are $-NH_2$, $-NHCOR$, etc. also commensurate in scope with the claims? Thus, the substituted phenazinium salts of the formulae I and II have been rendered indefinite by the use of the term *amino*.

The examiner suggests removal of the term *amino* and providing discrete *amino* substituents for each occurrence where *amino* substituents are desired, to overcome this

rejection.

Claims 1, 3-10, 12, 13 and 30 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The definitions *-COO salt*, *-COO ester*, *-SO₃ salt* and *-SO₃ ester*, respectively, in claim 1, are relative definitions which render the claims indefinite. The definitions *-COO salt*, *-COO ester*, *-SO₃ salt* and *-SO₃ ester*, respectively, are not defined by the claims, the specification does not provide an adequate standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For example, the specification, on p. 7, uses open language, such as *preferably* and *and so on*, to define *-COO esters* and *-SO₃ esters* as those of the lower alcohols; but fails to explicitly limit the invention to these preferred embodiments. Thus, the substituted phenazinium salts of the formulae I and II have been rendered indefinite by the use of the definitions *-COO salt*, *-COO ester*, *-SO₃ salt* and *-SO₃ ester*, respectively.

The examiner suggests removal of the definitions *-COO salt*, *-COO ester*, *-SO₃ salt* and *-SO₃ ester*, respectively, and providing discrete *-COO salts*, *-COO esters*, *-SO₃ salts* and *-SO₃ esters*, respectively for each occurrence where *-COO salts*, *-COO esters*, *-SO₃ salts* and *-SO₃ esters* are desired, to overcome this rejection.

Claims 1, 3-13 and 30 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase *an acid anion*, in claim 1, is a relative phrase which renders the claim

indefinite. The phrase *an acid anion* is not defined by the claims, the specification does not provide an adequate standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The specification, on p. 15, uses open language, such as *comprising*, to define *acid anions*, but fails to explicitly limit the invention to these specifically disclosed embodiments. Thus, the substituted phenazinium salts of the formulae I and II have been rendered indefinite by the use of the phrase *an acid anion*.

The examiner suggests removal of the phrase *an acid anion* and providing discrete *acid anions* for each occurrence where *acid anions* are desired, to overcome this rejection.

Claim 30 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 30 recites the limitation *the mixture of oligomeric phenazinium compounds according to claim 2... in lines 1-2* of the claim. There is insufficient antecedent basis, in claim 2, for this limitation with regard to the substituted phenazinium salts of the formulae I and II. According to the *Amendments to the Claims*, filed March 10, 2009, claim 2 has been cancelled by applicant.

Claim Rejections - 35 U.S.C. § 102

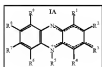
The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

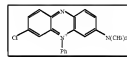
Claim 11 is rejected under 35 U.S.C. § 102(b) as being anticipated by Motono, et al. in JP 60056086.

The instant application recites substituted phenazinium salts of the formula IA, shown to



the left, where $R^1 = -H$; $R^2 = -H$; $R^3 = -N(CH_3)_2$; $R^4 = -H$; $R^5 = -Ph$; $R^6 = -H$; $R^7 = -Cl$; $R^8 = -H$; and $R^9 = -H$, as useful in copper electroplating of baths.

Motono, et al. (JP 60056086), as cited on the IDS, teaches substituted phenazinium salts of the formula IA, shown to the right, where $R^1 = -H$; $R^2 = -H$; $R^3 = -N(CH_3)_2$; $R^4 = -H$; $R^5 = -Ph$; $R^6 = -H$; $R^7 = -Cl$; $R^8 = -H$; and $R^9 = -H$, as useful in copper electroplating of baths [p. 2, Table 1, compound 3].



Claim Rejections - Obviousness-type Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute), so as to prevent the unjustified or improper timewise extension of the *right to exclude* granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claims because the examined application claim is either anticipated by, or would have been obvious over, the reference claims. {See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969)}.

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may

be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 11 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-10 of copending Application No. 10/575,304. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 7 in the copending application recites species, which provide overlapping subject matter with respect to the instant claims. For example, claim 7 of the copending application recites species, namely *3-chloro-7-N,N-dimethylamino-2-methyl-5-phenyl-phenazinium salt*, which are homologous with species in the instant application, namely *3-chloro-7-N,N-dimethylamino-5-phenyl-phenazinium* and *3-chloro-7-N-ethylamino-5-phenyl-phenazinium*.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Allowable Subject Matter

No claims are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to DOUGLAS M. WILLIS, whose telephone number is 571-270-5757. The examiner can normally be reached on Monday thru Thursday from 8:00-6:00 EST. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. James O. Wilson, can be reached on 571-272-0661. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DOUGLAS M WILLIS/
Examiner, Art Unit 1624

/James O. Wilson/
Supervisory Patent Examiner, AU 1624